

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Currently Amended) A system that renders data in an industrial automation environment, comprising:
 - a processor;
 - a memory communicatively coupled to the processor, the memory having stored therein computer-executable instructions configured to implement the system including:
 - a device analyzer that determines at least one of a property, limitation, ~~properties, limitations,~~ or software plug-in[[s]] associated with a plurality of devices intended for delivery of data received from a physical device within the industrial automation environment;
 - a Human Machine Interface (HMI) generator that receives the data and generates at least one of code or disparate data for [[the]]a HMI in accordance with the at least one of property, limitation, or software plug-in-determined properties of the plurality of devices, the HMI generator and delivers the at least one of code or disparate data to the plurality of respective devices;
 - ~~a communications component that maps data path information to data delivered to one of the devices to enable communication between the data and the HMI;~~ and
 - a processing component that renders one or more multi-dimensional software objects, that represent at least one process point associated with the physical device, based at least in part on the at least one of a property, limitation, or ~~properties, limitations,~~ software plug-in[[s]] of the plurality of devices, wherein manipulation of the one or more multi-dimensional software objects effectuates a change of state in the physical device or any combination thereof.
2. (Currently Amended) The system of claim 1, wherein the processing component facilitates modifying a data value of the at least one process point by changing data values associated with the one or more multi-dimensional software objects the device analyzer further comprising a memory or a processor.

3. (Currently Amended) The system of claim [[2]] 1, wherein the processing component receives an input for selection of the at least one process point from a nested data structure ~~processor utilizes artificial intelligence to render the data.~~
4. (Currently Amended) The system of claim [[3]] 1, further comprising, a communications component that maps data path information to the data delivered to one of the plurality of devices to enable communication between the data and the HMI ~~the processor employs artificial intelligence in connection with manipulating a mapping.~~
5. (Currently Amended) The system of claim 1, wherein the HMI generator automatically modifies the at least one of code or disparate data associated with an existing HMI for display on a new device for which the existing HMI is not configured, the at least one of code or disparate data is modified according to at least one of a property, limitation, or software plug-in ~~the determined properties of the new device.~~
6. (Currently Amended) The system of claim 1, wherein the plurality of devices include employed in a processing environment including at least one of a display, a data store, a server, a personal computer, a desktop computer, a laptop computer, a personal digital assistant, a hand-held computer, a cell phone, or a tablet computer, ~~or any combination thereof.~~
7. (Currently Amended) The system of claim 1, wherein the physical device includes at the device coupled to the HMI generator is least one of a valve, a pump, a relay, or a press display, a data store, a server, or any combination thereof.
8. (Currently Amended) The system of claim 1, wherein the HMI generator comprises further comprising:
an input component that obtains a common data input for creation of the one or more multi-dimensional software objects.

9. (Currently Amended) The system of claim 8, the one or more multi-dimensional software objects are ~~[[is]]~~ assigned specific data.

10. (Currently Amended) The system of claim 9, wherein the specific data varies at least one of size, color, translational location, rotation of a software object, text, audio, video, visibility, enable or disable state, object state, object type, object text, trending zoom level, audio volume, specification of audio clips, specification of video clips, starting, or stopping animation, ~~or any combination thereof.~~

11. (Currently Amended) The system of claim 8, wherein a change to the common data input affects the one or more multi-dimensional software objects.

12. (Currently Amended) The system of claim 1, wherein the HMI generator includes ~~further comprising:~~

a correlation component that associates the one or more multi-dimensional software objects with one or more physical devices; and

an object generation component that builds the one or more multi-dimensional software objects based on ~~associated with~~ data corresponding to the one or more physical devices, the one or more physical devices affecting changes to the one or more multi-dimensional software objects and the one or more multi-dimensional software objects affecting changes to the one or more physical devices.

13. (Currently Amended) The system of claim 12, wherein the one or more multi-dimensional software objects are imported from an outside source.

14. (Previously Presented) The system of claim 12, further comprising an interface that selects data to associate with the physical devices.

15. (Currently Amended) The system of claim 12, further comprising an interface that selects specific attributes of the one or more multi-dimensional software objects corresponding to data associated with the one or more physical devices.

16. (Currently Amended) The system of claim 1, wherein the processing component renders data based at least in part on at least one of a user access data level, a data type, or a data state that employs the processing component in an HMI residing in a processing environment,~~or any combination thereof.~~

17. (Currently Amended) The system of claim 16, further comprising a user-based association between displayed data and the at least one of ~~[[a]]~~ the user access level, ~~[[a]]~~ the data type, ~~[[a]]~~ or the data state,~~or any combination thereof.~~

18. (Withdrawn) A system that renders data in an industrial automation environment comprising:

- a processor;

- a memory communicatively coupled to the processor, the memory having stored therein computer-executable instructions configured to implement the system including:

- a device analyzer that determines properties, limitations, or software plug-ins associated with a plurality of devices intended for delivery of data;

- an identification component that determines if a format or a sub-format of data is known to the system;

- an artificial intelligence component that determines the format of unknown data received by a Human Machine Interface (HMI);

- a communications component that maps data path information to data delivered to one of the devices to enable communication between the data and the HMI; and

- a processing component that creates a plurality of multi-dimensional software objects from the data in the HMI based at least in part on a suitable format, wherein the suitable format is based at least in part on the properties, limitations, or software plug-ins of the device.

19. (Withdrawn) The system of claim 18, the artificial intelligence component locates and renders a partial data set.

20. (Withdrawn) The system of claim 18, further comprising a memory which stores previously unknown data types for comparison with future data.
21. (Withdrawn) The system of claim 18, the HMI renders the data into at least one of text, audio, video, static images, interactive images, or any combination thereof.
22. (Withdrawn) The system of claim 18, the processing component provides an error message when data cannot be rendered.
23. (Withdrawn) The system of claim 18, the processing component further renders data into suitable formats or sub-formats compatible with display capabilities of a device on which the data is to be presented.
24. (Withdrawn) A method to display data based at least in part on a zoom level, comprising:
employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:
determining properties, limitations, or software plug-ins associated with a plurality of devices intended for delivery of data;
converting 3-dimensional data into 2-dimensional data or vice versa based at least in part on properties, limitations, software plug-ins of the device, or any combination thereof;
displaying the data in a plurality of disparate views;
displaying an error message on one or more of the plurality of devices that cannot properly render the plurality of disparate views; and
presenting views associated with a corresponding zoom level.
25. (Withdrawn) The method of claim 24, further comprising:
presenting data associated with a zoom level chosen by the user; and
suppressing data associated with the zoom level chosen by the user.
26. (Withdrawn) The method of claim 24, further comprising assigning the data or the zoom levels.

27. (Withdrawn) The method of claim 24, further comprising associating the zoom level and the data in a non-linear relationship.
28. (Withdrawn) The method of claim 24, further comprising utilizing artificial intelligence to infer a default zoom level based on a user preference.
29. (Withdrawn) A system that recognizes or creates a software object representing a physical device, comprising:
- a processor;
 - a memory communicatively coupled to the processor, the memory having stored therein computer-executable instructions configured to implement the system including:
 - a software object generator that determines properties, limitations, or software plug-ins associated with a plurality of physical devices intended for creation of the software objects;
 - a Human Machine Interface (HMI) generator that formats data according to a multi-dimensional object structure based at least in part on the properties, limitations, or software plug-ins of the physical devices; and
 - a communications component that maps data path information to the formatted data to enable communication between the formatted data for the physical device and the HMI.
30. (Withdrawn) The system of claim 29, further comprising an artificial intelligence component that recognizes a new device added to the system.
31. (Withdrawn) The system of claim 29, further comprising an identification component that recognizes substantially all the components coupled to the system.
32. (Withdrawn) The system of claim 29, further comprising a mapping component that provides connectivity to the physical devices.

33. (Withdrawn) A method for rendering data in an industrial automation environment, comprising:

- employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:

- determining formatting requirements, properties, limitations, multi-level hierarchical attributes, or software plug-ins associated with a plurality of devices intended for delivery of data;

- formatting the data based at least in part on the properties, limitations, multi-level hierarchical attributes, or software plug-ins of the devices; and

- delivering the formatted data to the respective devices by mapping data path information to the delivered data to enable communication between the formatted data and a Human Machine Interface (HMI).

34. (Withdrawn) The method of claim 33, further comprising reformatting data associated with an existing Human Machine Interface (HMI) for delivery to a newly detected device based at least in part on the determined formatting requirements of the newly detected device.

35. (Withdrawn) A method for rendering data in an industrial automation environment, comprising:

- employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:

- receiving data from a physical device to a Human Machine Interface (HMI);

- ascertaining formatting requirements, properties, limitations, or software plug-ins associated with the physical device;

- comparing format of the data to data formats known to the HMI;

- determining the format of unknown data received by the HMI;

- rendering the data in the HMI into a suitable format based at least in part on the properties, limitations, or software plug-ins of the physical device; and mapping data path information to the received data to enable communication between the rendered data and the HMI;

wherein rendering generates one or more multi-dimensional objects associated with one or more components of a plurality of disparate systems.

36. (Withdrawn) A method for recognizing or creating at least one software object representing at least one physical device, comprising:

employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:

mapping data path information to data delivered to the physical device to enable communication between the data and a Human Machine Interface (HMI);
determining Input/Output (I/O) and communications protocol of the physical device;
formatting data in accordance with the determined properties of the devices; and
creating one or more software objects that represent the Human Machine Interface (HMI) and the I/O interface with the physical device;

wherein the Human Machine Interface (HMI) is associated with one or more disparate systems.

37. (Withdrawn) A method for rendering data in an industrial automation environment, comprising:

means for employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:

means for determining properties, limitations, or software plug-ins associated with a plurality of devices intended for delivery of data;

means for formatting data to a plurality of multi-dimensional objects based at least in part on the properties, limitations, or software plug-ins of the devices; and

means for delivering the formatted data to the respective devices by mapping data path information for the delivered data to the respective devices to enable communication between the data and a Human Machine Interface (HMI);

wherein the plurality of multi-dimensional objects are associated with one or more process points.

38. (Withdrawn) A method for rendering data in an industrial automation environment comprising:

- means for employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:

- means for ascertaining formatting requirements, properties, limitations, or software plug-ins associated with a physical device intended for delivery of data;

- means for determining whether a format of data is known to the system; and

- means for determining the format of unknown data received by a Human Machine Interface (HMI);

- means for rendering the data in the HMI into a suitable format based at least in part on the properties, limitations, or software plug-ins of the physical device; and

- means for mapping data path information to data delivered to the physical device to enable communication between the data and the HMI.

39. (Withdrawn) A system for recognizing or creating at least one software object representing at least one physical device, comprising:

- means for employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:

- means for mapping data path information to data delivered to the device to enable communication between the data and a Human Machine Interface (HMI);

- means for generating at least one software object by determining properties associated with the devices intended for creation of the software objects;

- means for formatting data in accordance with the determined properties of the devices;
- and

- means for creating the software object that represents the Input/Output (I/O) interface with the device

- means for displaying the software object in two or more dimensions in accordance with requirements, properties, limitations, or software plug-ins associated with the device.

40. (Withdrawn) A method to display data based at least in part on a zoom level, comprising:
means for employing a processor executing computer executable instructions stored on a computer readable storage medium to implement the following acts:
means for determining properties, limitations, or software plug-ins associated with a plurality of devices intended for delivery of data;
means for presenting 3-dimensional data as 2-dimensional data or vice versa based at least in part on properties, limitations, software plug-ins of the device, or any combination thereof;
means for displaying data in a plurality of disparate views; and
means for associating respective views with a corresponding zoom level;
wherein the data includes one or more objects that represent one or more disparate systems and one or more associated disparate system components.
41. (Withdrawn) The method of claim 24, wherein properties, limitations, software plug-ins of the device can include screen resolution, screen size, processor type, available memory, color capabilities and display type.
42. (Withdrawn) The method of claim 24, wherein the data is associated with two or more process points.
43. (Withdrawn) The method of claim 24, wherein the error message is sent in a plurality of formats.
44. (Withdrawn) The method of claim 24, wherein the one or more of the plurality of devices that cannot properly render the plurality of disparate views renders at least a portion of the plurality of disparate views.
45. (Withdrawn) The method of claim 36, further comprising drilling down on the one or more software objects to display at least one component associated with the one or more disparate systems.

46. (Withdrawn) The system of claim 39, wherein the software object represents one or more disparate systems and one or more associated disparate system components.
47. (Withdrawn) The system of claim 39, wherein the software object represents one or more process points.
48. (Withdrawn) The system of claim 47, wherein the software object representing one or more process points includes a process point value or quality display.
49. (New) The system of claim 1, wherein the processing component employs the at least one process point to modify an attribute associated with the one or more multi-dimensional software objects including at least one of color, size, shape or location on a display screen.
50. (New) A method for renders data in an industrial automation environment, comprising:
determining at least one of a property, limitation, or software plug-in associated with a plurality of devices intended for delivery of data received from a physical device within the industrial automation environment;
receiving the data from the physical device;
generating at least one of code or disparate data for a Human Machine Interface (HMI) in accordance with the at least one of property, limitation, or software plug-in of the plurality of devices;
delivering, by employing the HMI, the at least one of code or disparate data to the plurality of devices;
rendering a multi-dimensional software object, that represents at least one process point associated with the physical device, based at least in part on the at least one of a property, limitation, or software plug-in; and,
receiving an input that manipulates of the multi-dimensional software object; and
effectuate a change of state in the physical device based on the input.

51. (New) A system that renders data in an industrial automation environment, comprising:
means for determining at least one of a property, limitation, or software plug-in associated with a plurality of devices intended for delivery of data received from a physical device within the industrial automation environment;

means for receiving the data from the physical device and generating at least one of code or disparate data for a Human Machine Interface (HMI) based on the at least one of property, limitation, or software plug-in of the plurality of devices, the means for receiving delivers the at least one of code or disparate data to the plurality of devices; and,

means for rendering a multi-dimensional software object, that represents at least one process point associated with the physical device, based at least in part on the at least one of a property, limitation, or software plug-in, wherein the means for rendering effectuates a change of state in the physical device based on manipulation of the software object.